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Evaluating Transfer Programs Within a General Equilibrium Framework

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In response to budgetary pressures, many developing countries have moved (or are considering moving) to more targeted poverty alleviation programs. A central component of these programs involves a transfer to "poor" households, either in the form of a cash transfer or an infra-marginal subsidized ration. It is useful to separate the direct and indirect income (or welfare) effects when evaluating the economic impact of such transfers. The direct income effects reflect the design of the program, i.e., the rules for targeting transfers; these are often referred to as first-round effects and are captured by partial equilibrium approaches to policy evaluation. The indirect effects capture the second-round income changes brought about by the impact of cash transfers and their financing on the level and composition of demand and supply.

This paper focuses primarily on the indirect income effects, more particularly those that are a consequence of the need to finance the program domestically. We view this dimension of the program to be especially important, since any credible poverty alleviation strategy must have underlying it a credible financing strategy. The latter, in turn, can have important consequences for the level and distribution of household incomes and economic welfare.

Separating the Indirect Effects into Their Three Components

In this section we present a general equilibrium model of the economy that identifies the sources of the welfare impacts of cash transfer programs. First, there is the *redistribution effect* due to the fact that someone must be taxed in order to pay for the cost of the transfer program. If high-income households bear the brunt of this taxation, and if we attribute a social value to a more equal distribution of income, then the resulting welfare cost will be less than the direct welfare gain from the transfers.

Second, there is the *reallocation effect*, which results from the fact that the pattern of demand will change if those who finance the program have income elasticities of demand different from those who receive the transfers. The resulting demand changes can have important consequences for government revenues when taxes vary substantially across commodities. The welfare effects arise essentially because demand shifts away from (or toward) commodities for which demand was previously too low, due to their inefficiently high tax rates.

Finally, there is the *distortionary effect* because of the need to raise the revenue to finance the program through manipulating distortionary commodity taxes and subsidies. For example, if the program is financed by reducing distortionary subsidies, the effect is positive, but if it is financed by increasing distortionary taxes, it may be negative.

Based on this model, we show how the results from a computable general equilibrium model can be combined with disaggregated data from household surveys to evaluate the full impact of such programs on social welfare. We further show how the three components can be usefully subsumed within one parameter, namely, the *adjusted cost of public funds.* This term represents the welfare cost of financing the program and should be compared to the welfare benefit from the transfers as captured by the commonly used distributional characteristic.

This paper focuses primarily on the indirect income effects that are a consequence of the need to finance the program domestically—an especially important consideration, since any credible poverty alleviation strategy must have underlying it a credible financing strategy.

The adjusted cost of public funds is simply the standard cost of public funds (i.e., the social welfare cost of raising one unit of government revenue) multiplied by a parameter capturing the tax propensity of households receiving transfers. Whereas the cost of public funds will, in

general, vary according to how the program is funded and is independent of how the program budget is spent, the tax propensity is independent of how the program is financed and will, in general, vary according to how the budget is spent. If households receiving transfers spend their extra income disproportionately on taxed (subsidized) goods, then this results in a second-round increase (decrease) in government revenue captured by a tax propensity less (greater) than unity. This means that for every unit of income transferred to households, the government needs to raise less (more) than one unit of revenue through manipulating the existing system of taxes and/or subsidies. The tax propensity captures the welfare implications of this adjustment.

Applying the Model to an Illustrative Case Study

We present an illustration of this approach using data for Mexico to evaluate the country's recent redirection of their poverty alleviation strategy away from universal food subsidies toward targeted cash transfers. The model used in this analysis relies on a social accounting matrix (SAM) of Mexico for 1996 that was able to capture differences among the regions in terms of production, income, and consumption patterns. Nationally, households are classified into three income groups, which are distributed differently across each of the five regions. We then performed various policy simulations and evaluated their impacts on welfare. This involves taking the indirect welfare impacts from the CGE analysis and superimposing them on the household-level data.

The basic approach is to compare the social costs of raising the revenue needed to finance the program (the "cost of public funds") across alternative financing instruments, including the actual financing instrument (the elimination of food subsidies) and hypothetical alternatives (various reforms of the value-added tax system). These costs are also compared to program benefits. The analysis clearly shows that the move from universal food subsidies to targeted transfers has two sources of benefit: (1) the introduction of a more distributionally powerful transfer policy instrument, and (2) the fact that this reduces the need to trade off equity objectives against efficiency objectives when designing the tax system. More generally, the welfare cost of funding such programs can be substantially lowered when they are accompanied by reforms of the tax system.

Keywords: general equilibrium, poverty alleviation, social welfare, domestic finance, cost of public funds, tax reform

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